Report: Refuse Fleets Could Reduce U.S. Methane Emissions with RNG

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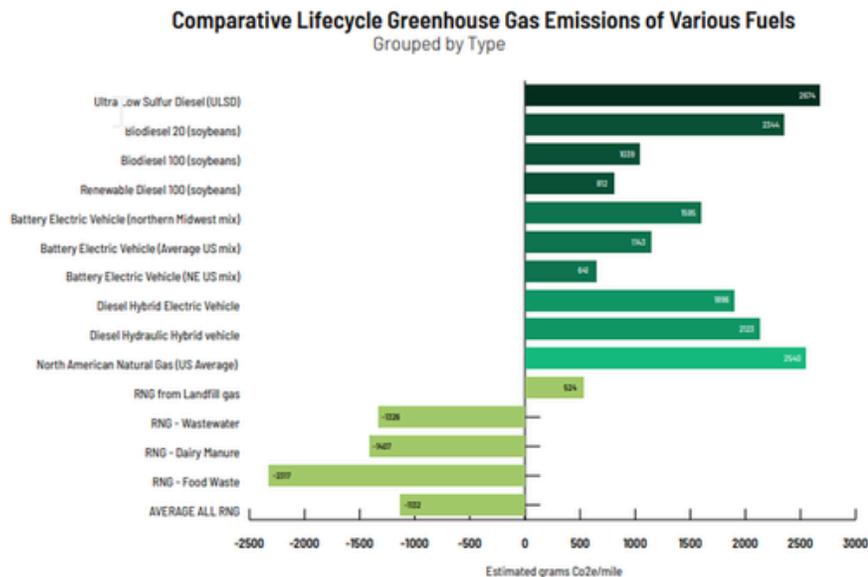
Comparative Lifecycle Greenhouse Gas Emissions of Various Fuels
Grouped by Type

RNG trucks rated highest in terms of performance, cost, and cutting lifecycle GHG emissions, and health-damaging pollutants in Energy Vision's report. *Graph: Energy Vision*

If refuse truck fleets operated on renewable natural gas made from organic waste, it could drastically reduce U.S. methane emissions, according to a new report from Energy Vision.

Energy Vision — which has been promoting the production and use of RNG since 2009 — published a new report to assess various alternative fuels and new vehicle technologies for reducing greenhouse gas emissions and other negative impacts from waste and recycling collection truck fleets.

The report examines nine options refuse fleets can use to lower their impacts, ranging from biodiesel and renewable diesel, to fossil and renewable natural gas, to hybrid technologies, to battery electric vehicles, DME, and hydrogen.

Of the nine strategies analyzed, the report found trucks equipped with natural gas engines powered by organic waste-derived RNG fuel achieved the greatest benefits at the lowest cost. RNG trucks rated highest in terms of performance, cost, and cutting lifecycle GHG emissions, and health-damaging pollutants.

Trucks running on RNG cut nitrogen oxides emissions 90% and significantly reduce particulate emissions compared to diesel.

"All the alternative fuel and technology options the report assessed had meaningful climate and clean air advantages over petroleum diesel," said Matt Tomich, president of Energy Vision and lead author of the report. "Each one had benefits and drawbacks, and the varying needs of refuse fleets mean that right now there is no 'one size fits all' solution. However, some approaches turned out to be much more impactful than others."

Cutting Methane Emissions with RNG

The report includes data on overall methane emissions related to waste disposal. Methane is at least 86 times more potent than carbon dioxide over a 20-year time frame, and landfills are the third largest source of methane emissions. That uniquely positions the waste and recycling industry to leverage significant climate benefits by reducing its methane footprint, Energy Vision officials said in a press release.

"RNG production turns what was previously discarded as waste in this country into a valuable energy resource, creating economic benefits," Energy Vision officials wrote. "Organic wastes including food wastes, green clippings, and agricultural wastes have long been sent to landfills, which is costly and a major source of methane emissions. Diverting those wastes into RNG production turns them into a clean fuel which prevents methane emissions."

Methane from decomposing organics in landfills, on farms, and at wastewater treatment plants account for 30% of total U.S. methane emissions. Currently, a portion of this methane is captured and refined to produce nearly 500 million gallons of RNG fuel a year, but that is roughly just 5% of overall potential RNG production.

Tripling current production to 1.5 billion gallons of RNG a year would produce enough fuel for every refuse truck in the U.S. Full potential RNG fuel production from all available feedstocks would be about 10 billion gallons of RNG a year.

The report finds that realizing this potential could power every urban bus and truck fleet in the country, displace a quarter of all on-road diesel fuel demand, and cut total U.S. methane emissions by 15%. That would get the U.S. halfway to the Methane Pledge target set by the Biden Administration to cut methane 30% by 2030.

Of the 180,000 refuse trucks currently operating in the U.S., there are approximately 10,000 refuse trucks powered by RNG, according to the report.